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WENDEROTH, LIND & PONACK, L.L.P.
2033 K STREET N. W.
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EXAMINER

ASINOVSKY, OLGA

ART UNIT	PAPER NUMBER
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1796

MAIL DATE	DELIVERY MODE
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11/20/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/537,157

Applicant(s)

SIMAL ET AL.

Examiner

Olga Asinovsky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 11-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 20-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 05/31/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, claims 1-10 and 20-23 in the reply filed on September 18, 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 112

2. Claims 1-10 and 2-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A structure of claimed branched polymer comprising one or more core arm(s) and one or more shell arm(s) is indefinite in light of the confusing term "core arm(s)", because core arm(s) by itself is readable as a star copolymer having core segment and arm(s) branches. If (a) is one or more core arm(s), what is a chemical definition for said arm(s)? The chemical compositions for one or more core arm(s) and one or more shell arm(s) are indefinite. Are they both ((a) and (b)) based on an acrylic polymer?

In claim 1, lines 3-4 the phrase "obtained and/or obtainable by (optionally metal catalysed) radical polymerization" makes a branched polymer indefinite in light of the term "and/or obtainable", because it is not clear that an acrylic copolymer is formed by a radical polymerization, since term "obtainable" has no positive limitation, but only requires the ability of producing a polymer by a polymerization process. There is no definition of a metal catalyst, if said metal catalyst is present.

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In claim 2, line 2, the phrase “a theoretical number” is confusing; the word “theoretical” should be deleted since it is a practical claimed invention. The phrase “transition metal catalysed radical polymerization” has no clear definition. What type of a catalyst is use for catalyzing radical polymerization? A structure of “a star shaped thermoplastic elastomer acrylic block copolymer” is not clear, because a core/shell structure is required in claim 1.

In claim 4, line 2, a copolymer is indefinite. The term “or obtainable” should be deleted, see explanation above. Also, term “obtainable” may include any additional catalyst not cited in the claim. “Transition metal catalysed radical polymerization” is not clear.

In claim 7, line 2 the phrase “core arm(s) are obtained or obtainable” makes a copolymer indefinite. The term “or obtainable” should be deleted, see explanation above. Also, term “obtainable” may include any monomer not specified in the claim. There is no chemical definition of “arm(s).

In claim 10, line 2, the phrase “and/or obtainable” makes a copolymer indefinite since can include any polymerizable monomer not specified in the claim. See explanation above for term “obtainable.”

Claims 3, 5, 6, 8-9, 20-23 are rejected in light of their dependency upon the rejected claim 1 above, since a branched polymer is not clear.

Claim Objections

3. Claim 1 is objected to because of the following informalities: The limitation in the brackets (optionally metal catalyzed) is confusing since it is not clear the presence of a metal catalyst. The brackets should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matyjaszewski et al U.S. Patent 5,763,548 or Goetz et al U.S. Patent 6,583,223 each in view of Yuasa et al U.S. Patent 6,326,116 or Ohba et al U.S. Patent 6,534,229.

Matyjaszewski discloses a graft copolymer produced by radical polymerization based on an atom transfer radical polymerization (ATRP) catalyst, an initiator and ligand, column 4, lines 15-18. The atom transfer radical polymerization reaction is produced by the transition metal catalyst, column 5, lines 29-60. The ATRP is readable in the present claims 1-2 as a transition metal catalyst. Any radically polymerizable monomer can be used including (meth)acrylates, column 6, lines 27-29; the most preferred monomers are (alkyl)(meth)acrylates, column 8, lines 41-43. The alkyl acrylates having a low T_g are readable in the present claims 1, 7 and 8. The alkyl methacrylates having a T_g from

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about 70 C and up to 160 C is readable in the present claims 1 and 9. Any additional radically polymerizable monomer cited in the present claim 10 is readable in Matyjaszewski invention, column 6, lines 40-67 through column 8, line 44 and column 14, lines 42-43. The predicted $M_n > 10^5$ is readable in the present claim 2, column 18, lines 65-66. The structures of the various controlled copolymers include block, random, star, graft, hyperbranched and dendritic (co)polymers, column 6, line 31; column 14, lines 31-34. Matyjaszewski discloses that different transition metal species may act in a different manner, column 25, lines 60-65. In the present claims there is no criticality of a radical polymerization or any source of a transition metal catalyst. In Matyjaszewski invention the radical polymerization process is controlled by living continuous polymerization conditions for obtaining the desired number average molecular weight of the polymers, column 5, lines 40-45; column 3, lines 61-67 and column 4, lines 1-45. The polydispersity index is depending on the reactivity of the ATRP, column 23, lines 14-18. Reference discloses controlled radical polymerization process. The polydispersity i.e. $M_w/M_n < 1.5$, column 32, line 49.

Matyjaszewski does not disclose claimed polydispersity of from about 3 to about 10 for the resulting acrylic copolymer, nor a polydispersity of at least 2 for a core polymer.

Goetz discloses (meth)acrylate block copolymer having unique branched copolymer structure such as star copolymer, column 2, lines 37-48 for the present claim 2. The block copolymer is based on (meth)acrylates resin having different glass transition temperatures, column 4, lines 18-45; column 10, lines 1-55. The alkyl (meth)acrylate

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monomers are readable in the present claims 1-10. The polymerization is made in the presence of an atom transfer radical polymerization (ATRP) catalyst, column 12, lines 25-67, for the present claim 2. The polymerization is carried out by controlled radical polymerization conditions that provide control over the molecular weight, molecular weight distribution, polydispersity and polymer chain architecture, column 11, lines 19-26. A polydispersity index of less than 2.5 is readable in the present claim 1 for at least an acrylate core polymer (a) having a polydispersity of at least 2, column 32, line 31. The resulting block copolymers are useful in a wide variety of applications including, for example, dispersants and surfactants, column 2, lines 24-25.

Goetz does not disclose the claimed polydispersity of from about 3 to about 10 for the resulting acrylic copolymer.

Yuasa et al discloses a base resin for producing a toner. The base resin includes (alkyl) acrylate resins, column 5, line 55. The binder resin for polyester resin has a weight average weight Mw in the range of 10,000 to 300,000 and a ratio Mw/Mn of 3 to 50, column 19, lines 33-36.

Ohba discloses binder resins including two types of polyester resins. One polyester resin is a straight-chain polyester resin (i) having Mw in the range of 7000 to 12000 and Mw/Mn is preferably 3 or less, column 5, lines 62-67 and column 6, lines 10-13. Other polyester resin is a crosslinked polyester resin (ii) having Mw in the range of 100,000 to

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400,000 and Mw/Mn is preferably 10 or more preferably 15 or more, column 6, lines 26-32. The base resin can have a branched structure, column 5, line 58.

All cited references disclose acrylic based copolymer. The primary references disclose a metal catalysed radical polymerization including metal transfer radical polymerization condition for any polymerizable monomer including alkyl(meth)acrylates.

It would have been obvious to one having ordinary skill in the art at the time of the present invention to use a polymerization process condition in each primary references to Matyjaszewski or Goetz and to consider that a polydispersity of the resulting acrylic copolymer can be obtained in the claimed range of at least 3 to 10 to control the star-shaped structure that has a benefit to impart controlled viscosity and thermosetting heat resistance of the resulting product, since the primary references discloses controllable radical polymerization process condition using atom transfer radical polymerization (ATRP) catalyst to provide control over the molecular weight, polydispersity and polymer chain architecture, and it has evidence for obtaining a broad polydispersity for acrylate copolymer as supported by teachings in Yuasa or Ohba. The prima facie case of obviousness is that an acrylic copolymer can be produced by radical polymerization conditions for obtaining desired Mw/Mn in the range of from 3 to 10 as suggested by Yuasa or Ohba using an ATRP process by teachings in Matyjaszewski or Goetz, since the desired polydispersity is depending on the type of the transition metal catalyst.

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6. Claims 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matyjaszewski et al U.S. Patent 5,763,548 or Goetz et al U.S. Patent 6,583,223 each in view of either of Yuasa et al U.S. Patent 6,326,116 or Ohba et al U.S. Patent 6,534,229 as applied to claims 1-10 above, and further in view of Everaerts et al U.S. Patent 6,734,256.

Matyjaszewski, Goetz, Yuasa and Ohba do not disclose a tackifier for an adhesive composition.

Everaerts discloses hot-melt processable adhesive based on an acrylate copolymer in the presence of a tackifier resin. Block copolymers can have a star block copolymer structure based on alkylacrylate resins having low $T_g < 20$ and a high $T_g > 20$ C., column 4, lines 39-67 and column 5, lines 1-37. The polydispersity of the block copolymer is about 2, a tackifier resin may comprise about 60 parts by weight of the composition to about 140 parts by weight based on total weight of the block copolymer, column 5, line 37. The amount of a tackifier resin is overlapping in the specified range in the present claims 21-22.

It would have been obvious to one of ordinary skill in the art at the time of the present invention to employ a tackifier resin in the amount of about 60 parts by weight by teaching in Everaerts invention in to a composition based on acrylic copolymer produced in the invention of Matyjaszewsky or Goetz for the purposes to improve tacky adhesive performance said acrylic copolymer as a hot-melt adhesive, because the polymeric products in Matyjaszewski or Goetz invention can be widely used as adhesives, Matyjaszewsky, abstract or Goetz, column 2, lines 24-25.

7. Claims 1-10 and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ma U.S. Patent 5,721,330 in view of Ohba et al U.S. Patent 6,534,229 and further in view of Tobing U.S. Patent 5,262,479.

Ma discloses acrylic copolymer produced in the presence of a radical initiator and a transition metal complex as a catalytic chain transfer agent, column 3, lines 57-65. The metal complex of cobalt (II) and cobalt (III) in the selected concentration as a catalytic chain transfer agent is used to control the molecular weight of obtained macromonomers, column 4, lines 18-37. Any additional initiators are also used to control the polymerization condition, column 4, lines 51-62. The obtained polymers formed by polymerization of (alkyl)(meth)acrylic monomer have low Tg and at least about 70 C of Tg. The alkyl(meth)acrylate monomers are readable in the present claims 1, 7-10. The resulting block copolymers and graft/comb copolymers are used in a wide range of industrial applications, column 5, lines 7-20. For example, the acrylic block copolymer can be used as a binder for coating application. Any additives would be expected for obtaining the desired properties of the resulting product.

Ohba has been discussed above in the paragraph 5. Ohba discloses Mw/Mn distribution preferably in the range of 10, column 6, lines 26-32.

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Tobing discloses a core/shell acrylic copolymer for a hot-melt adhesive application including tackifying resin. Tackifying resins content is between 35 to 60 % of the total amount of adhesive composition, column 4, line 40.

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ a tackifying resin of the invention in Tobing reference into acrylic copolymer composition in Ma invention for the purposes of imparting adhesive property by using acrylic copolymer in Ma invention for hot-melt adhesive application, since acrylic block copolymer in Ma invention is used as a binder for industrial applications such as a coating application, and to consider that the desired polydispersity index of from 3 to 10 can be obtained in Ma invention since the polydispersity index is depending on the type of catalyst and because an acrylic copolymer having claimed polydispersity is available by teaching in Ohba.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References have been considered.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olga Asinovsky whose telephone number is 571-272-1066. The examiner can normally be reached on 9:00 to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone

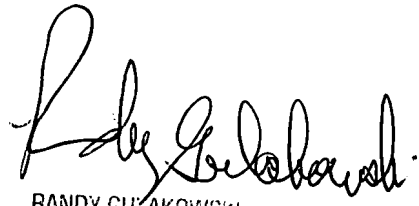
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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

O.A

October 28, 2007


RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700